**Task 1** (5 points). Implement the interior-point method for an inequality-constrained LP in 2 dimensions. You can assume that the problem is feasible, and in particular that (0,0) is feasible. You can also assume that the feasible set is a compact (i.e. finite closed) polygon that lies within [-1 1] x [-1 1]. Your code should plot the feasible set and the progress of the method towards the optimum (to visualize the feasible polygon, you can use a dense mesh of points obtained by the *ndgrid* on [-1 1] x [-1 1]). Try your method on several examples and submit three or four visualizations that are the most interesting. *Lite version (2 points): you can use fminunc to solve the unconstrained subtasks.*

**Task 2** (4 points) – *Ticket-to-Ride (TicketToRide.m).* You are opening a railroad company using the existing railroad tracks. You can start operations along any of the section of the rail on the map below. Each section you choose to operate will give you a certain yearly profit (always positive, specified in TicketToRide.m). However, in any city that is adjacent to the sections you operate, you need to open and maintain a depot, which has a yearly cost of 10 units. Using the reduction to st-mincut and an LP solver for the st-mincut problem, find out the optimal strategy in this situation (which sections to open). In your report put the map with the cities and/or sections you decide to operate highlighted (use any graphical editor) for that.